



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P/2012.WO/CJW		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/04069	International filing date (day/month/year) 17.04.2003	Priority date (day/month/year) 19.04.2002	
International Patent Classification (IPC) or both national classification and IPC H01L21/66			
Applicant XSIL TECHNOLOGY LIMITED			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 03.11.2003		Date of completion of this report 02.08.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Aran, D Telephone No. +31 70 340-2331 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**International application No. **PCT/EP 03/04069****I. Basis of the report**

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-20 as originally filed

Claims, Numbers

1-25, 26 (part) as originally filed

26 (part), 27-50 received on 15.03.2004 with letter of 10.03.2004

Drawings, Sheets

1/8-9/8 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 29.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-50
	No: Claims	
Inventive step (IS)	Yes: Claims	1-50
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-50
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following document:

D1: WO 00/72224 A (DUIGNAN MICHAEL T ;POTOMAC PHOTONICS INC
(US)) 30 November 2000 (2000-11-30)

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document): a method of using a pulsed (p. 36, l. 26 and p. 37, l. 5-7) for program-controlled dicing of a substrate (see p. 32, l. 4, 5) comprising at least one layer (see p. 12, l. 6, 7), the method comprising the steps a (see p. 39, l. 8-14), c and d:

The subject-matter of claim 1 differs from this known document D1 in step b combining at least two of "pulse rate", "pulse energy" or "pulse spatial overlap" related to a selected plurality of scans of at least one layer. D1 foresees a restriction of damage by combining "pulse energy" and "pulse spatial overlap" (see p. 46, l. 18-25 and fig. 12) only in so called "additive mode" (see p. 20, l. 20 - p. 21, l. 2), thus not for dicing.

Document D1 also describes an apparatus regarded as being the closest prior art to the subject-matter of claim 33. The subject-matter of claim 33 differs from this known document D1 in storage means, measuring means and telescopic lens for combining at least two of "pulse rate", "pulse energy" or "pulse spatial overlap" related to a selected plurality of scans of at least one layer.

The subject-matter of claim 1 and 33 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as preventing the development of cracks.

The solution to this problem proposed in claim 1 resp. 33 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

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No where in the state of the art has been suggested that the combination of "pulse rate", "pulse energy" or "pulse spatial overlap" could prevent the development of crack related to dicing.

Claims 2-32 resp. 34-50 are dependent on claim 1 resp. 33 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 03/04069

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L21/66 B23K26/08 B23K26/40 B23K26/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B23K H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 00 72224 A (DUIGNAN MICHAEL T ; POTOMAC PHOTONICS INC (US)) 30 November 2000 (2000-11-30) page 5, line 17 - line 22 page 8, line 8 - line 26 page 12, line 1 - page 13, line 20 page 15, line 12 - line 20 page 20, line 22 - page 21, line 2 page 23, line 25 - page 24, line 11 page 31, line 25 - page 32, line 5 page 33, line 19 - page 35, line 8 page 39, line 8 - page 40, line 16 page 45, line 14 - line 16 page 46, line 18 - page 47, line 1; claims 1,3,13,16,17; figures 1-5,8-10,12 -/-	33, 37-41,50 1,4,5,9, 12,15, 16, 18-20, 23,34,51

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *Z* document member of the same patent family

Date of the actual completion of the international search

4 December 2003

Date of mailing of the international search report

12/12/2003

Name and mailing address of the ISA

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P A	WO 02 34455 A (XSIL TECHNOLOGY LTD ; FARSARI MARIA (IE); BOYLE ADRIAN (IE); DUNNE) 2 May 2002 (2002-05-02) page 3, line 27 - page 4, line 4 page 4, line 19 - line 20 page 5, line 1 - line 2 page 5, line 23 - page 6, line 3 page 10, line 10 - line 11 page 11, line 6 - line 18 page 14, line 7 - line 16 page 16, line 1 - line 12; figures 1-6, 14-21	33, 34, 37, 38, 45, 47-49 1-32

INTERNATIONAL SEARCH REPORT

Inter	location No
PCT/EP 03/04069	

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 0072224	A	30-11-2000	AU	5122800 A	12-12-2000
			EP	1099183 A1	16-05-2001
			WO	0072224 A1	30-11-2000
WO 0234455	A	02-05-2002	AU	1085902 A	06-05-2002
			EP	1328372 A1	23-07-2003
			WO	0234455 A1	02-05-2002
			IE	20010605 A2	28-11-2001
			IE	20010606 A1	01-05-2002
			IE	20010949 A2	10-07-2002
			IE	20010950 A1	10-07-2002
			US	2002088780 A1	11-07-2002
			IE	20010597 A2	28-11-2001
			IE	20010598 A1	26-06-2002
			IE	20010599 A2	28-11-2001
			IE	20010600 A1	26-06-2002